



RVSM/TF/3

INTERNATIONAL CIVIL AVIATION ORGANIZATION

South American Regional Office

ATM COMMITTEE OF THE GREPECAS ATM/CNS SUBGROUP

THIRD MEETING OF THE RVSM TASK FORCE

RVSM/TF/3

REPORT

(Lima, Peru, 8 to 9 August 2002)

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INDEX

i -	Index	i-1
ii -	History of the Meeting	ii-3
	Place and duration of the Meeting	ii-3
	Opening ceremony and other matters.....	ii-3
	Schedule, Organization, Working methods, Officers and Secretariat.....	ii-3
	Working language	ii-4
	Agenda	ii-4
	Attendance.....	ii-4
	Report on Agenda Item 1:	1-1
	Agenda Item 1:	
	Analysis of the Conclusions on RVSM matters adopted by the ATM	
	Committee of the GREPECAS ATM/CNS Subgroup - Third Meeting of	
	the RVSM Task Force (RVSM/TF/2)	
	Report on Agenda Item 2:	2-1
	Agenda Item 2:	
	ATC Operations (ATC/WG)	
	Report on Agenda Item 3:	3-1
	Agenda Item 3:	
	Safety and airspace monitoring Working Group (SAM/WG)	
	Report on Agenda Item 4:	4-1
	Agenda Item 4:	
	Aircraft operation and airworthiness Working Group (OPS/AIR/WG)	
	Report on Agenda Item 5:	5-1
	Agenda Item 5:	
	Review of the RVSM implementation plan of the CAR/SAM Regions	
	Report on Agenda Item 6:	5-1
	Agenda Item 6:	
	Any other business	

Appendix A:

Terms of reference of the working groups A-1

Appendix B:

Task List and OPS/AIR Task List..... B-1

Appendix C:

List of working papers and information papers C-1

HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Third Meeting of RVSM Task Force, was held, Lima, Perú, from 8 to 9 August 2002, after the First Seminar on RVSM Implementation in the CAR/SAM Regions. In this connection, the Delegation of the United States, kindly offered the premises of Doubletree El Pardo Hotel, to hold the RVSM/TF/3 Meeting.

ii-2 OPENING CEREMONY AND OTHER MATTERS

At the opening ceremony, Mr. Jorge Fernández, ATM Committee Secretary of the ATM/CNS Subgroup, accompanied by Mr. Leopoldo Pflucker, President of CORPAC, S.A. Board, welcomed the participants and presented the Rapporteur, Mr. Roberto Arca, and the Chairperson, Ms. Leslie Cary.

ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT

The Meeting held its sessions from 0900 to 1500 hours, with appropriate breaks. After approving the agenda, the working methods were discussed and it was agreed to develop the agenda items in three working groups, as follows:

- a) Working Group on ATC Operations (ATC/WG);
- b) Working Group on Safety and Airspace Monitoring Working Group (SAM/WG); and
- c) Working Group on Aircraft Operation and Airworthiness Working Group (OPS/AIR/WG).

Ms. Leslie Cary, acted as Chairperson of the Meeting; Mr. Roberto Arca, Rapporteur of the RVSM/TF acted as Secretary, assisted by Mr. Jorge Fernández, RO/ATM/SAR, Lima Office, Mr. Gustavo De León, RO/ATM/SAR, Mexico Office, Mr. Alberto Orero, RO/ATM/SAR, Lima Office, and Mr. José Moreno, ATM Expert, Project RLA/98/003.

The meeting decided to adopt the working methodology used during RVSM/TF/2 Meeting. The Meeting confirmed Mr. Brian Throop as Chairperson of the ATC/WG; and Mr. Saulo Da Silva as Chairperson of the SAM/WG. Mr. Roy Grimes agreed to chair the OPS/AIR/WG for this Task Force Meeting. In this regard, the meeting expressed its appreciation for the assistance provided by Mr. Grimes in the urgent matter of beginning the work of the OPS/AIR/WG.

ii-4 WORKING LANGUAGES

The working language of the Meeting and its relevant documentation were in English. Simultaneous interpretation was provided in English and Spanish.

ii-5 AGENDA

The following agenda was adopted:

- | | |
|----------------|---|
| Agenda Item 1: | Analysis of the Conclusions on RVSM matters adopted by the ATM Committee of the GREPECAS ATM/CNS Subgroup - Second Meeting of the RVSM Task Force (RVSM/TF/2) |
| Agenda Item 2: | ATC Operations (ATC/WG) |
| Agenda Item 3: | Safety and airspace monitoring Working Group (SAM/WG) |
| Agenda Item 4: | Aircraft operation and airworthiness Working Group (OPS/AIR/WG) |
| Agenda Item 5: | Review of the RVSM implementation plan of the CAR/SAM Regions |
| Agenda Item 6: | Any other Business |

Nine working papers and two information papers were presented to the meeting. The list of working papers and information papers is contained in **Appendix C** to the report.

ii-6 ATTENDANCE

Experts from 2 States of the CAR Region, Haiti and United States; 8 States of the SAM Region, Brazil, Chile, Colombia, French Guiana (France); Paraguay, Peru, Uruguay, and Venezuela; one State of the EUR Region, Spain; and 4 International Organizations, COCESNA, IATA, IFALPA and IFATCA, totalling 36 participants, attended the meeting. The list of participants is shown in pages iii-1 to iii-6.

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- (##) SAM WG Chairperson

Agenda Item 1: Analysis of the Conclusions on RVSM matters adopted by the ATM Committee of the GREPECAS ATM/CNS Subgroup - Second Meeting of the RVSM Task Force (RVSM/TF/2)

1.1 Under this agenda item, the meeting was invited to review the conclusions adopted by the RVSM/TF/2 meeting, and summaries of the working papers were provided for general information.

1.2 The working papers were assigned to appropriate working groups for the information to be discussed in depth. The terms of reference of ATC/WG, SAM/WG and AIR/OPS/WG are shown at **Appendix A** to the report.

1.3 The ATM Committee Secretary informed the meeting that the RLA/98/003 UNDP/ICAO Project has initiated a preliminary cost-benefit analysis to be presented at the ATM/CNS/SG/2 Meeting.

1.4 The Rapporteur stressed the importance of the States to provide the point of contact for ATC and airworthiness areas of each State/Organization involved in the RVSM implementation to assure the necessary coordination.

1.5 The ATM Committee Secretary informed the meeting that ICAO is reviewing the *Draft Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) between FL290 and FL410 Inclusive for Application in the Airspace of the Caribbean and South American Regions*.

1.6 Taking into account the aforementioned, the Task Force Chairperson informed the meeting that this Draft Guidance Material is to be reviewed by all parties involved in the implementation of RVSM in the CAR/SAM Regions. The document is in the development process and comments and corrections are requested from the States/Organizations concerned. A final version will be submitted to ICAO for endorsement prior to the implementation of RVSM.

Agenda Item 2: ATC Operations (ATC/WG)**Report of the ATC Working Group**

- 2.1 The group had excellent participation, with members from Brazil, Chile, Colombia, France, Haiti, Peru, Spain, United States, COCESNA, IFALPA, IFATCA and ICAO, offering comments.
- 2.2 The group felt the need to complete the preliminary analysis on altitude stratus, exclusionary airspace, and non-approved aircraft.
- 2.3 The group reviewed the task list of the ATC working group and noted progress on the Concept of Operations and the ATC training manual. In this sense, the group agreed to recommend that the airspace from FL290 to FL410 in the CAR/SAM regions be approved for RVSM operations.
- 2.4 The meeting took note that some States may need to modify their individual implementation plans to accommodate their specific needs. Also, the member from Colombia stated that his State's current plan is to implement RVSM from FL350 to FL390. However, he did note that Colombia would be reviewing the information received during this meeting and the associated seminar, and may revise their decision in the future. The ATC/WG, through its chairman, will remain in contact with Colombia to provide them with further information or assistance as necessary.
- 2.5 The group had extensive discussions concerning the accommodation of non-approved aircraft. The group was of the opinion that RVSM approved aircraft should have operational priority for RVSM altitudes. At the same time, there is strong agreement that each State should have the ability to develop procedures for the accommodation of non-approved aircraft in their domestic airspace. This would be in addition to those flights already permitted under ICAO guidelines and/or under procedures utilized in other global implementations. The group noted that these procedures would have to be carefully developed and implemented to limit their possible negative effect on the safety analysis.
- 2.6 Taking into account all the aforementioned, the group agreed to formulate the following:

Decision 3/1 – RVSM Operational Concept (CONOPS)

That:

- a) The airspace in the CAR/SAM Regions from FL290 to FL410 be approved for RVSM operations;
- b) Approved aircraft should have operational priority for RVSM altitudes; and
- c) Each State/Organization should have the ability to develop procedures for the accommodation of non-approved aircraft in their domestic airspace.

2.7 The group did note that care should be taken to ensure that the procedures and language/definitions used in the CAR/SAM for the development of different documents did not conflict with those used in other adjacent regions or with ICAO procedures and guidelines.

2.8 When the draft CONOPs is completed, it will be sent to the States and service providers in the region along with an implementation table. This table will contain information about those States that have already indicated that they intend to implement RVSM from FL290-410. The CONOPs will also provide details of the options available to the States, and the impact their decisions will have on regional RVSM implementation. This will allow States to evaluate their situation and inform the ATC working group whether or not they intend to implement RVSM from FL290 to FL410, as well as how they will accommodate non-approved aircraft. Once this information is received, the working group can determine whether or not transition areas will be necessary for regional implementation. The information will also be used to develop a draft conclusion for submission to the ATM Committee.

Decision 3/2 – Transition Areas

That:

- a) The ATC/WG prepare a CONOPs table containing information and details of the options available to the States, and the impact their decisions about non-approved aircraft accommodation will have on regional RVSM implementation;
- b) The RVSM transition areas in the CAR/SAM Regions will be determined as necessary after the appropriate evaluation of the States survey; and
- c) The distribution of the aforementioned table be done directly to the ATC/WG point of contact in each State/Organization.

2.9 The group reviewed the additional appendices contained in WP/7, including a draft RVSM implementation AIC/NOTAM, and procedures for lateral offsets. Brazil, Chile and Peru agreed to review the documents and compare them with existing documentation to determine what changes are needed. The results will be submitted to the RVSM/TF/4 meeting in the form of track changes.

Decision 3/3 – AIC/NOTAM

That, the members of the RVSM/TF of Brazil, Chile and Peru be in charge of analyzing and comparing the documentation contained in the AIC/NOTAM (Appendix B of WP/7) and determine what changes are required.

2.10 The group briefly reviewed draft contingency procedures. It was agreed to gather information as to the extent of radar and direct pilot/controller communications in the region to determine to what extent contingency procedures will be necessary for RVSM implementation. The group noted that there are numerous existing procedures that can be easily modified for use in the CAR/SAM Regions. In addition, the regional Doc 7030 documents already contain significant material on RVSM operations and related contingency procedures.

2.11 The group discussed the Flight Level Allocation System (FLAS) and determined that the procedures in ICAO Annex 2 should be reviewed to determine if they could be used in the Region. Brazil and Spain noted that they currently have a letter of agreement concerning FLAS in the EUR/SAM corridor that may need to be modified depending on how the situation is handled. Copies of that letter will be forwarded to the WG Chairperson so that the issue can be studied.

Decision 3/4 – Flight Level Allocation System Studies (FLAS)

That the ATC/WG study which procedures in Annex 2 - related to Flight Level Allocation System – should be reviewed to determine if any changes are necessary to be applied in the RVSM CAR/SAM scenario.

2.12 In connection with Conclusion 2/4 RVSM/TF/2, the Meeting took note about the Brazilian fleet readiness for RVSM operations in the CAR/SAM Regions. This information was similar to the information presented by Chile. The group felt that the RVSM/TF should request the ATM Committee Secretary to urge all States/Organizations to prepare similar information to be used by the ATC/WG and the SAM/WG. Keeping this in mind, the group formulated the following:

Decision 3/5 – Flight Level Occupancy Analysis

That, the ATM Committee Secretary takes the appropriate action in order to urge all States/International Organizations to conduct an analysis of Flight Level Occupancy between FL290 and FL410 stratum to assist the RVSM/TF complete the RVSM operational concept taking into account the following:

- a) Flight type (domestic, international, general aviation, military);
- b) Amount of flights;
- c) Percentage of occupancy;
- d) Flight level (between FL290 and FL410); and
- e) Aircraft type.

Note: The States/International Organization could use the following forms to collect this information:

Table 1- Flight Type Distribution in Upper Airspace of FIRs XX, XX

FIRs XX AND XX -UPPER AIRSPACE		
FLIGHT TYPE	NUMBER OF OPERATIONS	PERCENTAGE (%)
TOTAL		

Table 2- Aircraft Type Distribution in Upper Airspace of FIRs XX, XX

AIRLINE	ACFT TYPE	NUMBER OF OPERATIONS	PERCENTAGE (%)
TOTAL			

Table 3- Flight Level Distribution in the State XX Upper Airspace

STATE XX UPPER AIRSPACE		
REPETITIVE FLIGHT PLAN		
FLIGHT LEVEL	NUMBER OF OPERATIONS	PERCENTAGE (%)
TOTAL		

Agenda Item 3: Safety and airspace monitoring Working Group (SAM/WG)**Report of the Safety and Airspace Monitoring Working Group (SAM/WG)**

3.1 The participants of this group were as follows:

Brazil – Saulo José da Silva, Chairman
Haiti – Marc Paulemon
Spain – Juan de Mata Morales López
USA – Brian Colamosca, José Luis Perez, Ross Burton
ICAO – José Moreno, UNDP/ICAO Project RLA/98/003

3.2 The meeting discussed the best work methodology to accomplish the SAM/WG tasks and agreed to the presentation on the proposed agenda to facilitate these tasks. Mr. Brian Colamosca informed the group that in order to facilitate the work, the same agenda items used in other regions could be adopted with minor changes to reflect aspects of the CAR/SAM Regions.

3.3 The group agreed with the proposal and the presentation of the proposed agenda started. After discussing the agenda, the group agreed on the following agenda items for use in this working group and in future meetings of the SAM/WG:

Decision 3/6 – Agenda for SAM/WG meetings

That the items of the agenda of the working group meetings would be as follows:

- a) Agree on agenda;
- b) Review Safety and Airspace Monitoring Work Group Terms of Reference from Appendix A of TF/2 Report;
- c) Review Duties and Responsibilities of Caribbean and South American Monitoring Agency (CARSAMMA).
- d) Review the RVSM TF/2 Report: Safety and Airspace Monitoring Considerations;
- e) Review of Safety Assessment Process:
 - Target Level of Safety (TLS) application;
 - Collision risk model forms – CAR/SAM RVSM Guidance Material Appendix B, with supplemental model for crossing-route scenario;
 - Description of collision risk model parameters and means of estimation;
 - RVSM/TF IP's.

- f) Readiness Assessment - review of the Preliminary Assessment of the Readiness of CAR/SAM Operators and Aircraft Types for Implementation of the Reduced Vertical Separation Minimum (RVSM);
- g) Height-keeping performance monitoring.
 - Review of CAR/SAM minimum monitoring requirements;
 - Provisional Identification of Operator/Aircraft Pairs Requiring Height-Keeping Performance Monitoring;
- h) Other Business;
- i) Future SAM Work Program;
- j) Report to RVSM Task Force.

3.4 The group evaluated the terms of reference of the SAM/WG, contained in RVSM TF/2 report, with Mr. Brian Colamosca reviewing each item and proposing that they remain unchanged.

3.5 The Group reviewed the additional duties and responsibilities of CARSAMMA established in the GREPECAS/10 Meeting (Las Palmas, Canary Islands, 23-27 October 2001), Conclusion 10/13 – Appendix D to the Report on Agenda Item 3, page 3D-3, and compared them with the current duties and responsibilities of APARMO and concluded to adopt them with minor changes as follows:

Conclusion 3/1 – RVSM Duties and Responsibilities of the CARSAMMA

That the CAR/SAM Monitoring Agency (CARSAMMA) has the following main RVSM duties and responsibilities:

- a) To establish and maintain a central registry of State RVSM approvals of operators and aircraft using the CAR/SAM Regions airspace where RVSM will be applied;
- b) To facilitate the transfer of approval data to and from other RVSM regional monitoring agencies;
- c) To establish and maintain a data base containing the results of height keeping performance monitoring and all altitude deviations of 300 ft or more within CARSAM Regions airspace, and to include in the database the results of CARSAMMA requests to operators and States for information explaining the causes of observed large height deviations;
- d) To provide timely information on changes of monitoring status of aircraft type classifications to State authorities and operators;
- e) To assume overall responsibility for:
 - i) The administration of the Global Positioning System Monitoring System (GMS); and

- ii) The assessing compliance of operators and aircraft with RVSM height-keeping performance requirements in conjunction with RVSM introduction in the CARSAM Regions;
- f) To provide the means for identifying non-RVSM approved operators using CARSAM airspace where RVSM is applied; and notifying the appropriate State approval authority; and
- g) To develop the means for summarizing and communicating the content of relevant databases to RVSM Task Force decision makers for use in agreeing on the timing and extent of RVSM application within the airspace under their administration.

3.6 The group discussed the feasibility of conducting a cost-benefit analysis according to the RVSM TF task list and decided to use OAG for the necessary traffic data. The Group recognized the limitations of this data as it doesn't reflect IGA and non-scheduled flights, but it can facilitate a provisional analysis. Based on the above mentioned, the Group made the following decision:

Decision 3/7 – Cost-Benefit Analysis

That the cost/benefit analysis will be done for the period 2004-2018 using the same approach as for US domestic airspace analysis. As traffic data from the respective FIRs is not currently available, OAG can permit a preliminary evaluation. The results will be ready for the RVSM/TF/5 Meeting. As for the cost-benefit analysis, the Group will consider the RVSM implementation in just one phase.

3.7 Based on the task list, that requests the traffic sample for the start of the process of safety assessment, the group decided that CARSAMMA send a letter to the ATM Committee Secretary, urging CAR/SAM States/Organizations to provide a sample of traffic data as described below:

Decision 3/8 – Traffic Sample

That the ATM Committee Secretary take the necessary actions to urge States/Organizations to collect a 30 days traffic sample from 1 December to 30 December 2002 and send it to CARSAMMA as soon as they have finished the data collection. That sample must be in accordance with the form described in RVSM/TF/2 report, Appendix D and preferably in Microsoft Excel file.

3.8 The group expressed its concern about the official status of the RMA all over the world, but no conclusion was reached, as this involves economics and legal aspects that are not the core knowledge of this Group.

3.9 The meeting also expressed that, due to the high costs involved, the need to carry out a series of activities which originate the specialization of officers from the administration, and the need that these activities be carried out immediately, so as to permit a safe and orderly RVSM implementation, GREPECAS should take pertinent actions through a regional agreement, to definitively entrust to Brazil the CARSAMMA monitoring agency management.

Agenda Item 4: Aircraft operation and airworthiness Working Group (OPS/AIR/WG)**CAR/SAM Operations/Airworthiness Group**

4.1 The OPS/AIR/WG discussed the need for the following tasks, which need to be accomplished:

- a) Fleet Readiness. Need for the RVSM/TF to establish fleet readiness target for implementation and plan for 12-, 6-, 3-month readiness reviews;
- b) Operator and State Education and Information Program
 - RVSM Aircraft/Operator Approval Documentation web page
 - Videos and/or CDs
 - Workshops
 - ICAO State letters to inform authorities especially those not represented at RVSM/TF meetings.
- c) State and Regional coordination;
- d) State publication of harmonized Aeronautical Information Publication Supplement;
- e) ATS Readiness;
- f) Pre-implementation Monitoring;
- g) Safety Assessment;
- h) Planned implementation date and flight level (FL) stratum;
- i) Document Development and Publication or Work Completion Dates.

4.2 By January 2003, States/Organizations shall publish advance notification of implementation intent to operators.

4.3 By January 2004, States/Organizations shall publish AIP Supplements/NOTAMs (designation of RVSM airspace, references for aircraft/operator approval, flight planning, contingency procedures, phraseology, policy/procedures for non-RVSM aircraft).

4.4 By January 2004, ICAO shall publish Doc 7030 amendments (Regional Supplementary Procedures).

- 4.5 By December 2002, Task Force shall establish “CAR/SAM RVSM Documentation web page” (Aircraft/Operator Approval process and procedures). Include link to FAA RVSM Documentation Web page.
- 4.6 By January 2003, OPS/AIR WG post Example State Regulations on RVSM Docs page.
- 4.7 By January 2003, OPS/AIR WG coordinate translation of paragraphs 10, 11 and Appendix 4 and 5 from FAA 91-RVSM. (Coordinate with ICAO Lima Office for advice on translation).
- 4.8 By January 2003, OPS/AIR WG post Example Operations Specifications and Letters of Authority on RVSM Documentation web page.
- 4.9 By (date TBD) OPS/AIR WG and SAM publish Procedures and Requirements for Monitoring.
- 4.10 By (date TBD) OPS/AIR WG and SAM WG publish Procedures and Requirements for Registry on CARSAMMA RVSM Approvals Database.
- 4.11 By (date TBD), RVSM/TF and ICAO Offices publish CAR/SAM RVSM Guidance Material.
- 4.12 **Appendix B** to the report contains the task lists of RVSM/TF as well as the work program for the OPS/AIR WG.
- 4.13 Considering the need for the nomination of a chairperson for the OPS/AIR/WG, as soon as possible, the meeting made the following decision:

Draft Decision 3/9 - Chairperson of the OPS/AIR/WG

That the ATM Committee Secretary initiate the appropriate actions in order to find out an individual to chair the OPS/AIR/WG, as soon as possible.

Agenda Item 5: Review of the RVSM Implementation Plan of the CAR/SAM Regions

5.1 Under this agenda item, the meeting reviewed the RVSM implementation plan and related schedule, including harmonization of the dates of the RVSM plans of the United States and the CAR/SAM Regions, as approved during the previous meeting, to be presented to the ATM Committee of the ATM/CNS Subgroup for approval and further submission to GREPECAS.

5.2 The meeting will continue developing the operational concept and present its conclusions at a future meeting.

5.3 Likewise, as expressed in agenda item 2 the meeting concurred with the recommendation to harmonize the implementation date with that of North America.

5.4. In spite of the fact that the RVSM/TF continues developing the final operational concept, it was noted that the experiences collected in ATC simulations of United States, the analysis made in Spain, and in view that the operational concept being developed by the Task Force, takes into account the possibility that the States that so consider, may implement non-excluding RVSM airspaces where it will be permitted in certain conditions, non-RVSM aircraft to operate in its RVSM airspace, the CAR/SAM RVSM/TF considered that it was convenient from the operational point of view, the implementation in one phase from FL290 to FL410.

5.5. The Task Force also deemed pertinent the harmonization of the RVSM implementation in the CAR/SAM Regions, with the implementation date of United States, by the end of 2004.

5.6. As mentioned, the meeting agreed to formulate the following Draft Conclusion:

Draft Conclusion 3/2 – Harmonization of the RVSM implementation in the CAR/SAM Regions, with the Domestic RVSM implementation plans of United States

That:

- a) Taking into account the operational convenience, the RVSM implementation in the FIRs of States/International Organizations of the CAR/SAM Regions, the implementation of FL290 and FL410 be carried out only in one phase; and
- b) The RVSM implementation date be effective by the end of 2004 in a harmonized manner, with the United States.

Agenda Item 6: Any Other Business

6.1 Under this agenda item, the meeting considered the recommendation made by ATC/WG Chairperson, Mr. Brian Throop that the Second RVSM Implementation Seminar for the CAR/SAM Regions be held during July or August 2003. The ATM Committee Secretary informed the meeting that this seminar would be scheduled on an appropriate site and date.

6.2 Regarding the RVSM/TF/4 meeting, it will be held coincident with the Second ATM/CNS Subgroup Meeting in Rio de Janeiro, Brazil, from 16 to 20 September 2002.

6.3 The meeting also considered the need to carry out an OPS/AIR workshop and requested the ATM Committee Secretary to take the necessary actions.

APPENDIX A

TERMS OF REFERENCE OF THE RVSM/TF WORKING GROUPS

ATC Operations Work Group (ATC/WG)

The ATC/WG is responsible for addressing all matters relating to air traffic services within the RVSM and transition airspace, to include the following:

- a) To develop a CAR/SAM RVSM Operational Concept;
- b) To identify exclusionary RVSM airspace;
- c) To identify RVSM transition airspace
- d) To develop the procedures for all facets of RVSM operations, including:
 - RVSM operations within and between exclusionary and transition airspace;
 - RVSM operations between FIRs and ATC service providers;
 - Weather deviation procedures;
 - Turbulence mitigation procedures;
 - Necessary contingency procedures;
 - Procedures for discontinuing the use of RVSM for temporary periods;
 - Procedures for the accommodation of non-approved civil aircraft, including emergency and humanitarian flights and ferry and maintenance, if appropriate;
 - Procedures for the accommodation of non-approved State aircraft;
 - Procedures for providing RVSM status information to controllers at the operational position, including any necessary changes to existing Flight Data Processing (FDP) systems.
- e) To consider controller workload issues and identify the need for simulations;
- f) To assist States and Organizations with airspace changes;
- g) To recommend and develop RVSM training material and methods for ATC staff;
- h) To provide to the States common aeronautical information publications and AIP supplements related to RVSM implementation;
- i) To develop necessary changes to regional documentation;
- j) To develop ATC procedures for switchover day and to determine if a cell should be created to assist States, Organizations and Operators during the switchover;
- k) To provide appropriate material to the RVSM web site administrator;
- l) To assist the SAM/WG with developing a mechanism for receiving, collating, and analyzing information concerning operational errors;
- m) To track the progress of the States in implementing ATC-related RVSM tasks, and to report this progress regularly to the RVSM Task Force;
- n) To accomplish other tasks as directed by the full RVSM Task Force.

Safety and airspace monitoring work group (SAM/WG)

The SAM/WG is responsible for mathematical and statistical analysis to assist with the maintenance and on going monitoring of safety through the assessment of collision risk for the CAR/SAM Regions RVSM and other tasks as agreed with RVSM Task force. The main tasks of the SAM/WG are:

- a) To develop a monitoring program to ensure that the quantity and quality of data are collected to allow an assessment of vertical collision risk;
- b) To review existing mathematical and statistical techniques to assure their appropriateness for the CAR/SAM regions;
- c) To ensure the transferability of aircraft data collected from other airspace regions;
- d) To support the assessment of the safety of RVSM prior to and during the Verification and Operational Trials by the production of collision risk assessments based on altitude deviation incidents and altitude monitoring data to determine whether the TLS is being met;
- e) To devise suitable methodologies for incorporating the effects of projected traffic increases and system changes on occupancy and collision risk in the future environment;
- f) To identify those elements which are critical in the assessment of collision risk and suggest areas where improvements might be effective in reducing risk;
- g) To establish a policy for investigating those errors that may jeopardize satisfaction of the Target Level of Safety (TLS);
- h) To estimate periodically the vertical occupancies (traffic densities, passing frequencies, etc.) to support ongoing monitoring of the target level of safety;
- i) To perform periodically other data collections (e.g. ASE stability) in order to ensure that the parameter values used in the mathematical collision risk models remain current;
- j) To track the progress of the States under the task lists and to report States' progress to RVSM TF;
- k) To accomplish other tasks as directed by the full RVSM Task Force;
- l) To provide material for the RVSM web site administrator.

Aircraft Operations and Airworthiness Work Group (OPS/AIR/WG)

The OPS/AIR/WG is responsible for addressing pilot operations, airworthiness, and aircraft approval issues, and:

- a) To harmonize policy on operations and airworthiness issues related to RVSM;
- b) To develop and harmonize guidance related to the implementation of RVSM and co-ordinate on issues which may arise in the application of the RVSM Minimum Aircraft System Performance Specifications (MASPS);
- c) To initiate necessary action to amend aeronautical charts to reflect navigational requirements related to RVSM;
- d) To develop policy for use of Airborne Collision Avoidance System (ACAS) as it relates to RVSM;
- e) To review monitoring data prior to implementation and after implementation;
- f) To track the progress of the States under the task lists and to report States' progress to RVSM TF;
- g) To provide material for the RVSM web site administrator;
- m) To accomplish other tasks as directed by the full RVSM Task Force.

APPENDIX B

TASK LIST

CAR/SAM RVSM Implementation Task List				
ID	Description	Start	Finish	Resource Names
1	Identify Operational Need			
2	Agree operational concept for CAR/SAM traffic flow	11-Jul-02	23-Nov-02	ATC/WG, RVSM Task Force
3	Conduct Cost Benefits Analysis	11-Jul-02	-6 months	
4	Conduct preliminary benefit cost analysis	11-Jul-02	31-Oct-02	SAM WG
5	Finalize benefit cost analysis	11-Jul-02	-6 months	SAM WG
6	Safety Assessment	11-Jul-02	-45 days	
7	Review available summary data (non-compliant aircraft, aberrant aircraft etc)	11-Jul-02	-45 days	SAM/WG, RVSM Task Force
8	Examine history of height keeping errors related to ATC clearances and assess possible RVSM	11-Jul-02	-45 days	SAM/WG, RVSM Task Force
9	Confirm RVSM risk model assumptions/parameters are consistent with airspace where RVSM	11-Jul-02	Jun-03	SAM/WG, RVSM Task Force
10	Conduct simulations to predict occupancy after RVSM implementation	11-Jul-02	Mar-04	SAM/WG, RVSM Task Force
11	Collect weather and turbulence data for analysis - this should include Andean standing wave analysis	11-Jul-02	-45 days	SAM/WG, RVSM Task Force
12	Report large height deviations to monitoring agency (including level assignment errors)	11-Jul-02	Ongoing	ATS Providers, Users
13	Feasibility Analysis	11-Jul-02	31-Dec-02	
14	Examine the operational factors and workload associated with implementation	11-Jul-02	31-Dec-02	ATC/WG, RVSM Task Force
15	Determination of Requirements (airborne & ground systems)	11-Jul-02	-1 year	
16	Determine need for additional GMUs	11-Jul-02	-1 year	SAM/WG, RVSM Task Force
17	States assess the impact of RVSM implementation on controller automation systems (e.g., equipment suffixes) and plan for upgrades/modifications	11-Jul-02	-1 year	States
18	Aircraft & Operator Approval Requirements	11-Jul-02	TBD	
19	Promulgate the operational approval process	11-Jul-02	Ongoing	OPS/AIR/WG, RVSM Task Force
20	Notify States when significant changes occur to RVSM documentation	11-Jul-02	Ongoing	OPS/AIR/WG, RVSM Task Force
21	Perform Rulemaking (if required)	11-Jul-02	TBD	
22	Recommend State airspace regulatory documentation	11-Jul-02	TBD	States
23	Perform Necessary Industry & International Co-ordination	11-Jul-02	TBD	
24	Establish target implementation date	11-Jul-02	08-Aug-02	RVSM Task Force
25	Report to GREPECAS	11-Jul-02	Oct/Nov-03	RVSM Task Force Rapporteur
26	Develop regional documentation	11-Jul-02	-1 year	ATC/WG, RVSM Task Force
27	Process Doc 7030 amendment	11-Jul-02	TBD	ICAO Regional Office
28	Publish advance AIC / NOTAM	11-Jul-02	-2 years	States
29	Publish AIP Supplement containing RVSM policy/procedures	11-Jul-02	-6 months	States
30	Review inter-facility coordination procedures	11-Jul-02	-30 days	States
31	Finalize changes to Letters of Agreement	01-Jan-04	-30 days	States
32	Approval of Aircraft & Operators	11-Jul-02	-60 days	
33	Establish approved operations readiness targets	11-Jul-02	-6 months	IATA, ATC/WG, RVSM Task Force
34	Assess readiness	11-Jul-02	-60 days	IATA, OPS/AIR/WG
35	Develop Pilot & ATC Procedures	11-Jul-02	TBD	
36	Review application of tactical offset procedure to mitigate the effects of wake turbulence and ACAS alerts	11-Jul-02	TBD	ATC/WG, OPS/AIR/WG, RVSM Task Force

37	Process Doc 7030 amendment to weather and contingency procedures	11-Jul-02	30-Jun-03	ICAO Regional Office
38	Publish appropriate ATC policy & procedures on RVSM website	11-Jul-02	Ongoing	RVSM Task Force
39	Identify transition areas and procedures	11-Jul-02	TBD	States, ATC/WG
40	Conduct simulations	11-Jul-02	TBD	States, ATC/WG
41	Report on simulation activity	11-Jul-02	TBD	ATC/WG, RVSM Task Force
42	Continue to recommend that RVSM operators adopt ACAS 2	11-Jul-02	01-Jan-04	OPS/AIR/WG, RVSM Task Force
43	Develop procedures for handling non-compliant aircraft (inc ferry & mntce) in ATS documents	11-Jul-02	30-Jun-03	OPS/AIR/WG, ATC/WG, RVSM Task Force
44	Develop mutually acceptable ATC procedures for non-approved State acft to transit RVSM airspace	11-Jul-02	30-Jun-03	ATC/WG, RVSM Task Force
45	Consider procedures for suspension of RVSM, including mountain wave effects	11-Jul-02	30-Jun-03	ATC/WG, RVSM Task Force
46	Liaise with State defense authorities regarding "due regard" military operations	11-Jul-02	30-Jun-03	States
47	Pilot & ATC Training	11-Jul-02	TBD	
48	Provide ATC training documentation to States based on past experience	11-Jul-02	Ongoing	ATC/WG, RVSM Task Force Rapporteur, ICAO
49	Conduct initial local RVSM training for air traffic controllers		TBD	States, ATC/WG
50	Conduct final local RVSM training for air traffic controllers		TBD	States, ATC/WG
51	Perform System Verification	11-Jul-02	-90 days	
52	Height keeping performance monitoring needed to undertake initial safety analysis	11-Jul-02	Dec-03	Monitoring Agency and SAM/WG, RVSM Task Force
53	Provide representative traffic movement data to monitoring agency (<i>90 day sample, repeated</i>)	11-Jul-02	Dec-02	States
54	Undertake initial safety analysis	11-Jul-02	Dec-03	SAM/WG, RVSM Task Force
55	Prepare/maintain regional status report detailing RVSM implementation plans	11-Jul-02	Ongoing	RVSM Task Force Rapporteur
56	Final Implementation Decision	11-Jul-02	-45 days	RVSM Task Force
57	Report status of implementation to GREPECAS/13		Oct/Nov 04	RVSM Task Force Rapporteur
58	Review aircraft altitude-keeping performance and operational errors	11-Jul-02	-45 days	SAM/WG, OPS/AIR/WG
59	ATS State documentation complete	11-Jul-02	-60 days	States
60	Publish Trigger NOTAM	20-Nov-03	-7 days	States
61	Complete readiness assessment		-45 days	Monitoring Agency
62	Complete safety analysis		-45 days	RVSM Task Force
63	Declare Initial Operational Capability (Implementation day)		TBD	Monitoring Agency and SAM/WG, RVSM Task Force
64	Monitor System Performance		+1 year	
65	Perform Follow-On Monitoring		Ongoing	OPS/AIR/WG, SAM/WG
66	Declare Full Operational Capability			RVSM Task Force
67	Seminar/1	05-Aug-02	07-Aug-02	RVSM Task Force
68	Task Force/3	08-Aug-02	09-Aug-02	RVSM Task Force
69	Task Force/4	17-Sep-02	18-Sep-02	RVSM Task Force
70	Seminar/2	TBD	TBD	RVSM Task Force
71	Task Force/5	TBD	TBD	RVSM Task Force
72	Task Force/6	TBD	TBD	RVSM Task Force
73	Task Force/7	TBD	TBD	RVSM Task Force
74	Task Force - 90 day Follow Up	TBD	TBD	RVSM Task Force
75	Task Force - 1 year Follow Up	TBD	TBD	RVSM Task Force

OPS/AIR Work Programme

#	OPS/AIR Task List	Responsible	Complete By
1	Investigate translation of sections of FAA 91-RVSM/TGL-6 into Spanish. Prioritize translation of Chapter 10, 11 and Appendices 4 and 5 from 91-RVSM. Coordinate with SAM ICAO Office.	OPS/AIR	1/2003
2	Ops/Air and ATS Group chairmen update and distribute Example AIP for review at next meeting. (See TF 3 WP 7, Appendix B). Add RVSM Phraseology to AIP.	OPS/AIR	1/2004
3	Establish format of CAR/SAM RVSM Documentation page. FAA distribute updated format for RVSM Documentation page for review.	OPS/AIR	1/2003
4	Review and comment on CAR/SAM RVSM Guidance Material for Sept meeting	OPS/AIR	TBD
5	Survey all operators to determine RVSM upgrade plans and determine which States need aircraft approval assistance. Coordinate with SAMWG	IATA	10-11 2002
6	Remind operators that GREPECAS advocates compliance with ICAO Annex 6 provision for ACAS II equipage for designated aircraft by January 2003	IATA ICAO	1/2003
7	Post updated documents on CAR/SAM RVSM Documentation page	OPS/AIR	1/2003
8	Develop Spanish and English language versions of an approval process video/CD-ROM	OPS/AIR	1/2003
9	Consider conducting an Aircraft/Operator Approval Workshop in conjunction with RVSM Seminar proposed for 1/2003 timeframe	OPS/AIR ICAO	Sept meeting
9a	Coordinate visits to individual countries to review RVSM ATC and Operations/Airworthiness policy/procedures	IATA, ATC OPS/AIR	Report progress in Sept
10	Develop list of States with State registered civil aircraft and list of States with RVSM experience	OPS/AIR	Sept meeting
11	Publish advance notification NOTAM and State AIC announcing implementation date and scenario	OPS/AIR ATC, States	12/ 2002
12	Publish TCAS training material for Car/Sam application based on FAA and European examples.	OPS/AIR	1/2004
13	Establish FIR's and ICAO Regions affected by Car/Sam RVSM.	ATC	12/2002
14	Coordinate with ATC group to develop Doc 7030. Consider Car/Sam, Asia/Pacific and European Doc 7030 material.	OPS/AIR	1/2004
15	Publish on Documentation page an example RVSM regulation based on an existing South American State regulation	ICAO Lima	1/2003

#	OPS/AIR Task List	Responsible	Complete By
16	Coordinate with ICAO Lima (Roberto Cardoso) to obtain examples of Operations Specifications and Letters of Authority. Need examples from Car/Sam States.	FAA & ICAO	1/2003
17	Determine status of RVSM in Pacific and Antarctica/South Pole areas	ATC OPS/AIR	12/2002
18	In Example AIP, update draft contingency procedures. Consider oceanic and continental application. Review EUR, WATRS, South Atlantic and US procedures	OPS/AIR	1/2004
18a	Review Strategic Lateral Offsets for application in Car/Sam region	ATC OPS/AIR	1/2004
19	In Example AIP, review weather deviation procedures for application in continental and oceanic airspace.	OPS/AIR	1/2004
20	Report on status of US DRVSM mountain wave procedures	FAA	Sept meeting
21	Request data about frequency of mountain wave activity from Argentina, Bolivia, Chile and Ecuador.	ATC, OPS/AIR	Sept meeting
22	Update Aircraft/Operator Approval checklist for CAR/SAM application	OPS/AIR	Sept meeting
23	Review draft Car/Sam Minimum Monitoring Requirements. Update aircraft placement in Category 3.	SAM OPS/AIR	Review progress in Sept
24	Contact International Business Aviation Council and National Business Aviation Assoc.	OPS/AIR	Sept meeting
25	Follow developments regarding pilot actions for ACAS/TCAS Resolution Advisories	OPS/AIR IATA	Review progress in Sept
26	FAA review material developed for WATRS RVSM implementation for application in Car/Sam.	FAA	Sept
27	Expand Ops/Air coordination to include IFALPA, Airline management pilots and more operations specialists from Car/Sam authorities.	OPS/AIR	Review progress in Sept
28	TF consider developing an ICAO State letter emphasizing State roles and responsibilities, use of TF documents and information, RVSM contacts and implementation plans.	Task Force	TBD

LIST OF WORKING PAPERS

WP N°	Agenda Item	Title	Prepared by
WP/1	--	Agenda, working methods, schedule and work plan	Rapporteur
WP/2	1	TCAS II in an RVSM airspace	Rapporteur
WP/3	1	ACAS II in an RVSM airspace - Eurocontrol	Rapporteur
WP/4	1	Conclusions RVSM/TF/2 Meeting	Rapporteur
WP/5	1	List of contact points for coordinations of the Regional RVSM programme.	Rapporteur
WP/6	3	Analysis of Flight level occupancy within the Santiago de Chile FIR	Chile
WP/7	2	Tasks and Issues for the ATC Operations Working Group	USA
WP/8	2	Brazilian Fleet preparation	Brazil
WP/9	3	Data collection for CARSAMMA	Brazil

LIST OF INFORMATION PAPERS

IP N°	Agenda Item	Title	Prepared by
IP/1	--	General information	Secretariat
IP/2	--	List of working and information papers	Secretariat

LIST OF WPs AND IPs AS PER AGENDA ITEM NUMBER

Agenda, working methods, schedule		WP/1
General information		IP/1
List of working and information papers		IP/2
Agenda Item 1:	Analysis of the Conclusions on RVSM matters adopted by the ATM Committee of the GREPECAS ATM/CNS Subgroup - Second Meeting of the RVSM Task Force (RVSM/TF/2)	WP/2, WP/3, WP/4, WP/5
Agenda Item 2:	ATC Operations (ATC/WG)	WP/7, WP/8
Agenda Item 3:	Safety and airspace monitoring Working Group (SAM/WG)	WP/6, WP/9
Agenda Item 4:	Aircraft operation and airworthiness Working Group (OPS/AIR/WG)	IP/3
Agenda Item 5:	Review of the RVSM implementation plan of the CAR/SAM Regions	
Agenda Item 6:	Any other Business	